Alaska Department of Environmental Conservation
Division of Water Quality

Skagway Harbor Draft Total Maximum Daily Load Summary For Petroleum Hydrocarbons in Skagway, Alaska

TMDL AT A GLANCE:

Water Quality Limited?	Yes
Alaska ID Number:	10303-601
Criteria of Concern:	Petroleum Hydrocarbons
Designated Uses Affected:	Growth and propagation of fish, shellfish, other aquatic life, and wildlife.
Major Source(s):	Historical spills and current operations at docks and harbors
Loading Capacity:	4,022 µg/kg
Wasteload Allocation:	Not applicable
Load Allocation:	3,619.8 µg/kg
Margin of Safety:	Explicit 10 percent (402.2 µg/kg) and implicit assumptions
Necessary Load Reduction:	Varies by allocation area (see below)

Impairment Area	Total polycyclic aromatic hydrocarbons (PAHs) (µg/kg)					Percent Reduction
	Loading Capacity	WLA	LA	MOS	Maximum Observed	
West Harbor	4,022	N/A	3,620	402	13,779	71%
Central	4,022	N/A	3,620	402	6,902	42%

Scope of TMDL

Alaska Department of Environmental Conservation (ADEC) originally placed Skagway Harbor on Alaska's 1990 Section 303(d) impaired waterbody list due to sediment toxicity from metals. Studies concluded that a decrease in infauna diversity in the harbor was present. Additional sampling and analysis in 2007 and 2008 concluded that hydrocarbons, not metals, are the primary cause for the decrease in infauna diversity in the harbor. ADEC considers this water to be impaired due to its inability to fully support aquatic life.

A Total Maximum Daily Load (TMDL) is established to meet the requirements of Section 303(d)(1)(C) of the Clean Water Act and the U.S. Environmental Protection Agency's implementing regulation which require the establishment of a TMDL when a waterbody is impaired.

History and Background

The harbor was initially constructed in the early 1900s and was expanded off and on through dredge and fill operations reaching its current configuration in the late 1960s. The City of Skagway became an important part of Alaska's defense system during World War II as a staging area for the ALCAN Highway. Shipping operations in Skagway Harbor also supported regional mining operations. Metal ores were transported through the City of Skagway by rail and offloaded onto freighters and barges stationed in the harbor. Currently, harbor traffic is dominated by summer cruise ships and Alaska Marine Highway ferries.

ADEC does not know what is causing the petroleum impairments in Skagway Harbor. The potential sources include: historic spills and current activities at dock operations, including fueling and bilge pumping activities.

Analysis & Findings

A total of ten different studies between 1982 and 2009 were considered in developing this TMDL. Early monitoring showed toxicity to aquatic life and elevated levels of metals. Subsequent monitoring in 2007 and 2008 showed the levels of metals had decreased and elevated concentrations of polycyclic aromatic hydrocarbons (PAH) or petroleum products were present. Sheens and a petroleum odor were also observed.

Key findings:

- Water samples collected in the harbor met applicable water quality criteria for PAH in the water column.
- PAH sediment impairments are concentrated in the West and Central Harbor.
- Multiple sample sites had PAH concentrations that exceeded the NOAA sediment standards suggesting that levels of PAHs are high enough to impair biological communities.

Standards, Loading Capacity, and Allocations

A TMDL represents the amount of a pollutant the water body can receive while maintaining compliance with applicable water quality standards. This Total Maximum Daily Load (TMDL) establishes limits for hydrocarbons in Skagway Harbor. A TMDL is established to meet the requirements of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA) implementing regulation which require the establishment of a TMDL for the achievement of water quality standards when a water body is impaired.

A TMDL is composed of the sum of any individual waste load allocations (WLA) for point sources and load allocations (LA) for nonpoint sources and future source loads. In addition, a TMDL must include a margin of safety (MOS), either implicitly or explicitly that accounts for the uncertainty in the relationship between pollutant loads and the quality of the receiving water body.

This TMDL establishes limits for PAH in the bottom sediments of Skagway Harbor. To date, ADEC has not adopted numeric sediment quality standards. However, the ADEC Contaminated Sites Program recommends using standards developed by the National Oceanographic and Atmospheric Agency (NOAA). These NOAA standards are found in the *Screening Quick Reference Tables* and were used to establish the numeric target for the TMDL.

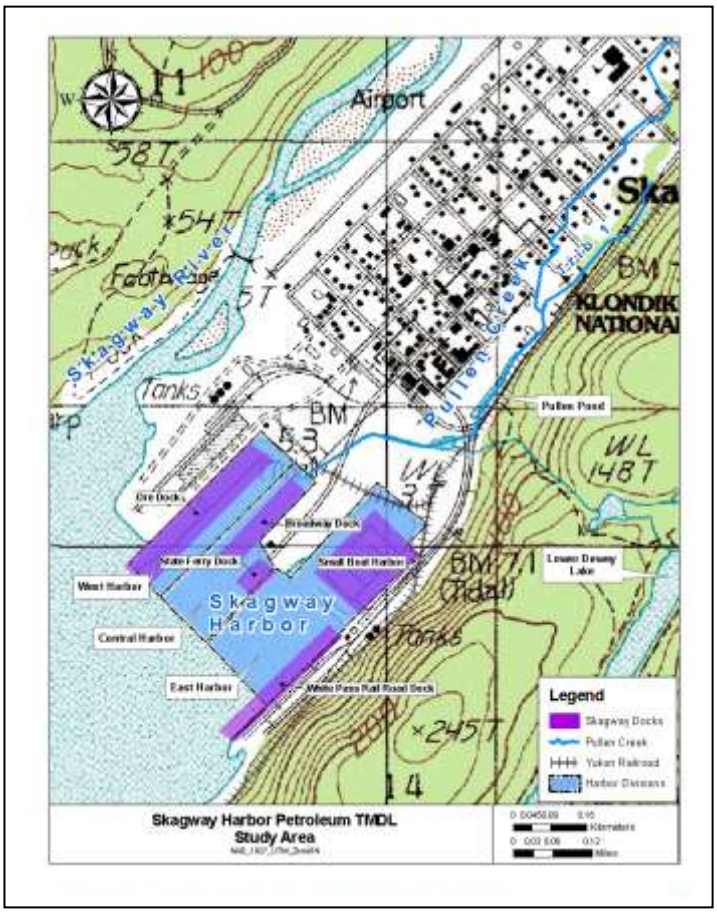
For the petroleum hydrocarbon TMDL target, ADEC used the toxicity limit known as the Effects Range-Low (ERL). The ERL represents the chemical sediment concentration at which toxic effects might begin to be observed in sensitive species. ERL guidelines are available for PAHs in marine sediment. For total PAHs, the ERL is 4,022.0 µg/kg. This is the recovery target level in the TMDL.

Because there are currently no direct discharges permitted to discharge petroleum hydrocarbons into these waters, the entire available loading capacity (minus the margin of safety) is allocated to nonpoint sources as the load allocation. Any future facilities who wish to discharge petroleum hydrocarbons will be subject to the water quality standards, permit limits and other applicable laws or regulations. The applicant would need to demonstrate that the proposed discharge will not negatively impact the sediment quality with petroleum hydrocarbon in the impaired areas.

Implementation

In order to meet water quality standards, the TMDL recommends the following actions:

- Allow the hydrocarbons in the sediment to naturally attenuate over time through burial by "clean sediment" or being flushed through the system by tidal action;
- Apply Best Management Practices (BMPs) to control stormwater run-off especially at docks and harbors;
- Monitor sediment quality periodically to assess recovery processes.



TMDL Public Review

A public review and comment period for the draft TMDL is underway. Written public comments must be mailed, faxed, e-mailed, or hand delivered to the addresses below by 4:30 p.m. on December 14th, 2010.

The public notice period runs from November 14th through December 14th, 2010. A public teleconference including a webinar will be held in Juneau on December 1st from 4-6 pm. For information regarding remote access, contact Brock Tabor (see below) by November 29th, 2010.

If you are a person with a disability who may need a special accommodation in order to participate in this public process, please contact Deborah Pock at (907) 269-0291 or TDD Relay Service 1-800-770-8973/TTY or dial 711 within 17 days of publication of this notice to ensure that any necessary accommodations can be provided.

The draft TMDL is available at ADEC's website; http://www.dec.state.ak.us/water/wqsar/index.htm. or upon request by contacting the ADEC:

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